MANAGEMENT SCIENCE AND ENGINEERING
B8862.001/IEOR E4220 – DEMAND AND SUPPLY ANALYTICS

Spring Semester 2013/2014   Professor Robert Phillips

All businesses face operational and pricing challenges including:
- How to configure and operate their supply chain,
- What kind of contracts to set with suppliers,
- What inventory levels to carry at various points in the supply chain,
- How to allocate products to sales channels and outlets,
- How to price their products over time to different market segments.

These challenges are often addressed individually and in isolation but, in reality, all of these decisions interact with each other at a fundamental level. This class looks at the demand and supply management challenges faced by companies in various industries and provides an introduction to the tools that can be used to address these challenges. We pay particular attention to the challenges involved in coordinating different decision areas across the firm. Specific topics covered include:
- Pricing and revenue management,
- Market segmentation,
- Customized pricing,
- Non-linear pricing,
- Markdown pricing,
- Consumer Choice Modeling,
- Inventory-service tradeoffs,
- Safety stock allocation,
- Information sharing,
- Supply chain coordination,
- Behavioral issues, fairness, trust and altruism.

Prerequisites	A basic understanding of both probabilistic and deterministic models.
Class Times	Monday and Wednesday. 1:00 – 2:30 Mudd Hall. Room 303.
Required Class Package	B8862.001/IEOR E4220 Class Pack
Required Text	R.L. Phillips, *Pricing and Revenue Optimization.* Stanford University Press, 2005. (Available at the bookstore and on reserve in the Engineering Library)

General References	Özer, Ö. and Phillips, R. *Oxford Handbook of Pricing Engineering.* Oxford University Press, 2012.
	D. Simchi-Levi, P. Kaminsky, E. Simchi-Levi, *Designing and Managing the Supply Chain,* McGraw-Hill/Irwin, 3rd edition, 2008.
	K. T. Talluri and G. J. van Ryzin, *The Theory and Practice of Revenue Management,* Springer, 2004.
	These books are on reserve in the Engineering Library.
Teacher	Professor Robert Phillips Uris 408 (212) 851-5815 rp2051@columbia.edu
Teacher Office Hours	TBD.
Teaching Assistant	TBD.
T.A. Office Hours	TBD.
Homework	There will be homework assignments throughout the class. You may work with other members on these assignments, but each student has to turn in an individual solution. Keep in mind that you will not be allowed to collaborate on the exam questions. **Homework is due at the beginning of class. There is no credit for late homework.**
Case Assignments	For classes with case assignments, each student group (three students) will turn in a maximum 5 page write-up describing their solutions. Students must be prepared to summarize the case and suggest a solution in class. I will pick students at random to summarize their case findings – your ability to do so will affect your grade.
Reading Assignments	The reading assignments will help you to better understand the material covered in class. I may pick a student at random at the beginning of class to evaluate whether you have completed the reading assignment. These pop questions will be used as a bonus – for example, I may decide to raise the letter grade of a border case student based on his/her performance on these quizzes.
Handouts	There will be class handouts for each lecture summarizing the main points covered. These handouts will also be posted on the course website.
Groups	You will work in groups of three people on the project and on the

preparation of the cases. Please e-mail the TA and let him know your group (one e-mail per group).

Exams   There will be one midterm exam and a final exam. For the midterm, you can bring one double-sided sheet of notes. For the final you can bring two double-sided sheets of notes.

Grading   Final Exam :   40%
                        Mid-term :   25%
                        Homeworks: 15% (total)
                        Project: 15%
                        Participation: 5%

Deadlines   **I do not accept any late homework or any late case write-ups.**